ZOOGOER

May-June 1985

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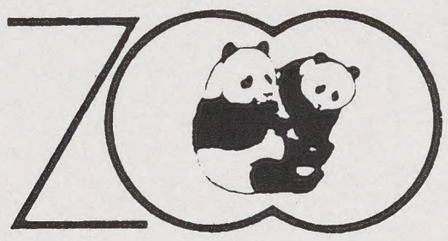
ZOOGOER

Volume 14, Number 3



Friends of the National Zoo is a nonprofit organization of individuals and families who are interested in supporting Zoo programs in education, research, and conservation. As members of FONZ, you and your family receive many benefits—publications, discount privileges, and invitations to special programs and activities to make your zoogoing more enjoyable and educational.

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Cover Photos

Front cover: Junior, a 19-year-old male orangutan at the National Zoo, is popular with visitors because he seems so—well—so human. But human biases about animal behavior often obscure the truth (page 4). Back cover: Without a carotene-rich diet, the brilliantly colored flamingo would be white. But there's more than meets the eye to a square meal at the Zoo (page 17). Cover photos by Jessie Cohen, NZP Office of Graphics and Exhibits.

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"Notes and News" is a new ZooGoer *column featuring letters from and to our readers—your zoological questions (with replies from NZP experts), your comments on* ZooGoer *articles, and news notes to you from FONZ and the Zoo. Send your views or questions to ZooGoer "Notes and News," National Zoological Park, Washington, D.C. 20008. (All letters and photos sent to "Notes and News" become the property of* ZooGoer, *which reserves the right to select and edit letters it publishes.)*

HELP A FONZ INTERN

FONZ summer interns will need housing near the Zoo or near public transportation from late May to early September. If you have a room in your house that will be empty this summer or if you need a housesitter, why not help a future Marlin Perkins or Jane Goodall?

These interns are a very select group of dedicated college students—some of the brightest and best of future zoo professionals. To help them, please call Mary Sawyer Hollander, 673-4955.

CALL FOR NOMINATIONS

In accord with Article II of our bylaws, the FONZ Board of Directors is hereby soliciting nominations from the membership.

Board Responsibilities

As members of a "working" Board, FONZ Directors "administer and manage" the affairs of the Friends of the National Zoo. The Board of Directors establishes the policies of the corporation, approves budgets and expenditures and otherwise directs and supervises the activities of FONZ officers and employees. Much of the Board's work is accomplished through active committees, including:

The *Administration Committee* establishes and supervises administrative policies and procedures for FONZ employees.

The *Education Committee* participates in development of FONZ-supported educational programs and supervises educational activities and NZP research grants authorized by the Board.

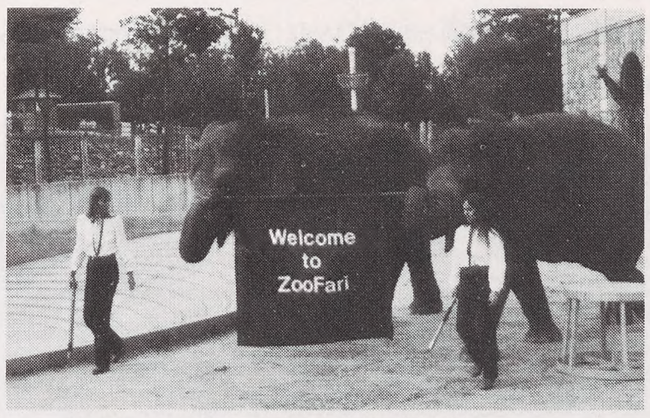
The *Finance Committee* institutes, develops and supervises fiscal operations.

The *Front Royal Committee* coordinates FONZ support programs at the Zoo's Conservation and Research Center at Front Royal, Virginia.

The *Membership Committee* is responsible for recruiting new members to FONZ and for developing membership activities.

The *Publications Committee* supervises publication and distribution of *ZooGoer* and *PawPrints.*

The *ZooFari Committee* carries out fundraising for the Theodore H. Reed Animal Acquisition Fund and conducts an annual ZooFari benefit gala.



The ZooFari Committee's 1984 benefit featured African performers. This year's May 16 gala highlights Asia.

The *Visitor Services Committee* oversees management and operation of FONZ gift shops, food, parking and other visitor service facilities at the Zoo.

All Board members serve on at least one committee, and attend two or more FONZ meetings each month. They serve on a voluntary basis without pay.

Criteria for Selection of Directors

The criteria by which potential candidates are judged for nomination to the Board of Directors are: the candidate's strong interest in supporting zoological education, research and conservation in accordance with the purposes of our corporation; leadership; experience or skills that are needed and would directly benefit the management and operations of FONZ; and willingness and time to participate fully in FONZ work and activities. Directors are expected to attend 15 to 20 full Board meetings, committee meetings and special events a year, usually scheduled on weekdays from noon to 2 p.m. Candidates must be dues-paying members of FONZ.

Nomination Procedures

Nominations may be made only by dues-paying family, couple or individual members in good standing. (Senior citizen, contributing and patron memberships of FONZ and members who previously joined the corporation as life members are entitled to all rights and privileges of dues-paying family, couple or individual members.) Employees of FONZ or the National Zoo are not eligible for membership on the FONZ Board of Directors.

Nominations must be submitted on an official FONZ nomination form with a biographical sketch of the nominee attached. Nomination forms can be obtained at the FONZ office or will be mailed on request. For information or forms, call 673-4950. Deadline for submitting nomination forms and accompanying biographical sketches is June 24, 1985. Address submissions to: William C. Bryant, Chairperson, FONZ Nominating Committee, National Zoological Park, Washington, D.C. 20008.

FOR TEACHERS

Families, Frogs, and Fun is a case study of the development of HERPlab, a family learning center in the Zoo's Reptile House. The book is designed to aid educators and zoo and museum staff in designing and developing similar learning labs. It is available free from the Office of Education, National Zoological Park, Smithsonian Institution, Washington, D.C. 20008.

Beastly Biases

Marcy F. Lawton

"Animal behavior," complained A. Ross Kiester, a zoologist at Tulane University, "is too interesting for its own good."

The source of his discontent was the fact that so many people think they understand why animals do what they do. Animals fascinate people, undoubtedly because they often do things that seem so familiar, so — well — so human.

For instance, Bonnie, a young orangutan at the National Zoo, enlivens sunny afternoons by "flirting" with tourists. The orange ape entertains herself and her audience by throwing a handkerchief-sized bit of burlap over her head and then ever-so-coyly pulling it away from her face, revealing first one eye and then the other. To the complete delight of her audience, she finishes her performance by tumbling head over heels off her perch and rolling around, apparently "laughing" herself silly.

The discussion around the orang's enclosure pinpoints the real reason behind Kiester's complaint:

"She's so smart," remarks one lady. "Just like a person, really."

"Smarter than some," replies her companion as the two wander off.

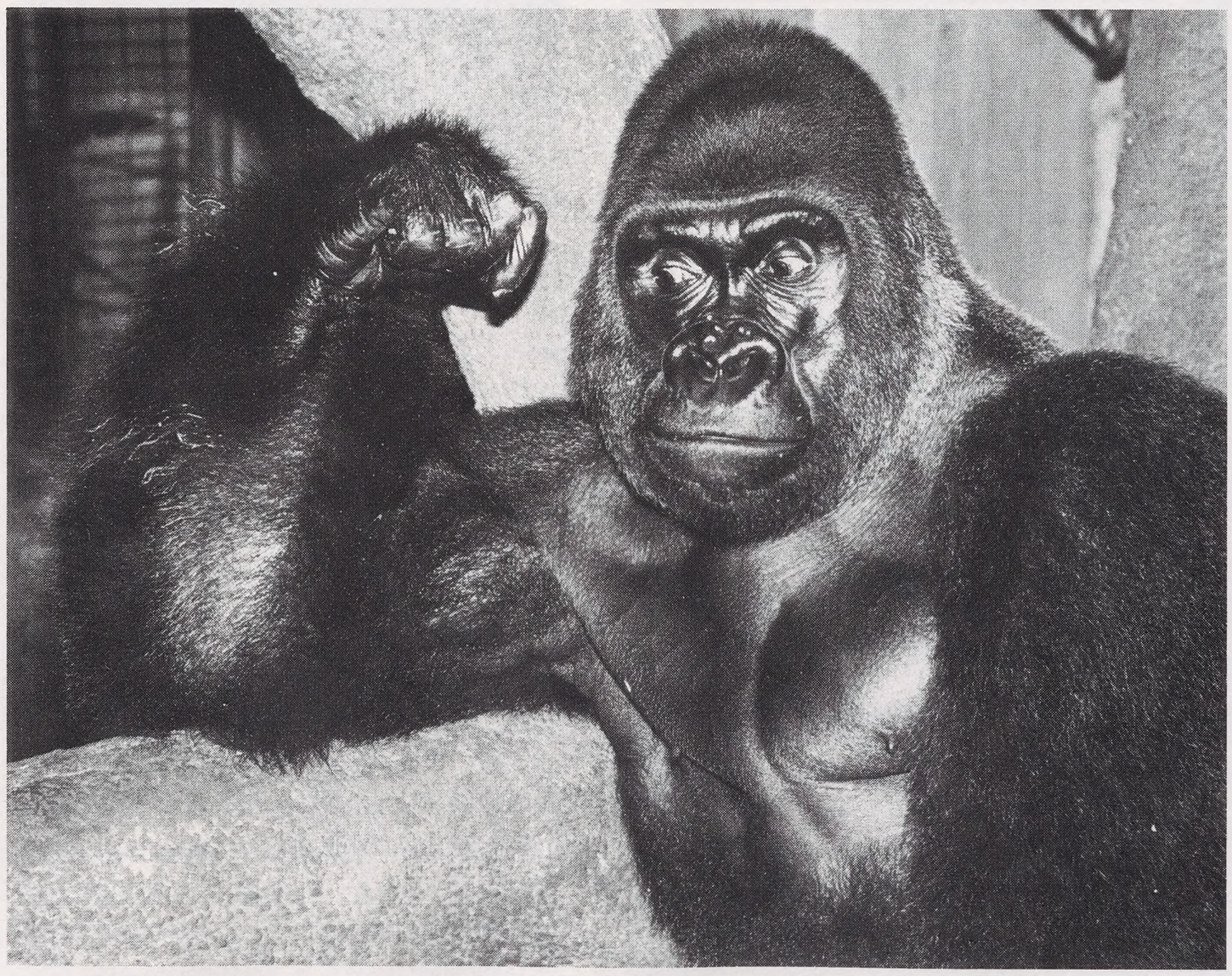
The temptation to attribute human motives and abilities to animals (anthropomorphism) or, conversely, to extrapolate from animal to human behavior (zoomorphism) is frequently irresistible. Animals can behave in ways that seem, at least at first, strikingly similar to human behavior, or (more seductive still) in ways that we would like to see humans behave. Is it any wonder that zoologists have seen in animals a mirror of man?

The "Heroic Baboon" Controversy

However, succumbing to the twin temptations of anthropomorphism and zoomorphism can do more to interfere with the study of animal behavior than cutbacks in research funds ever could. For instance, these two "isms" have afflicted the study of primate behavior for over a century.

In 1871, Darwin noted that, in times of stress, male baboons occasionally pick up infants. Because this behavior almost always occurs when the males are fighting among themselves, many biologists and anthropologists thought the males were protecting the infants from harm.

It was a reasonable assumption. Since human males might be expected to pick up helpless infants—indeed since this is the sort of thing we think humans ought to do—nobody questioned whether baboons that scooped up infants in the heat of battle were indeed protecting those babies. Instead, the behavior was called "infant rescue," and was some-



Jessie Cohen, NZP Graphics

Showing off his muscle? No. Hercules, a male lowland gorilla at the National Zoo, is simply resting his arm.

Dr. Lawton is a visiting scholar at the University of Alabama in Huntsville. This article is from her October 1984 presentation at the National Zoo's fourth Public Symposium, "The Mating Game."

Is it any wonder that zoologists have seen in animals a mirror of man?

times described with anthropomorphic terms like "heroic," "selfless," and "altruistic." Because the behavior was easily understood in human terms, or in terms in which we like to think about ourselves, a century passed before behavioral scientists began to investigate the peculiar phenomenon of "infant rescue" closely.

In the past decade, a growing number of scientists have challenged the notion that "infant rescue" is altruistic or heroic. Instead, these biologists have presented convincing evidence that male baboons pick infants up, not to shield the babies, but to protect themselves from serious injury. Apparently, in a confrontation, males are less likely to attack if their opponent is holding an infant in his arms.

Although the interpretation of "infant rescue" is still controversial, the history of interest in this behavior is a good example of how anthropomorphism can surround a puzzling bit of natural history with a comfortable intellectual inertia.

See No Evil

On the other side of the coin, zoomorphism, the attribution of animal characteristics to man, may well have had a similar effect on another aspect of primate studies: the investigation of infanticide. When Jane Goodall wrote about a female chimpanzee who, with her daughters, repeatedly kidnapped, brutalized, and murdered the infants of other female group members, the readers of *National Geographic* were horrified. Goodall and her readers were profoundly disappointed that these apparently gentle primates should have such an unexpectedly dark side.

Since Goodall's report, infanticide has been reported in a growing number of primate species. In fact, Sarah Hrdy, whose long-term studies of langurs brought infanticide into serious question, has argued that infanticide is a regular feature of langur social life. If infanticide is an ordinary event in primate life, why hasn't anyone noticed it before?

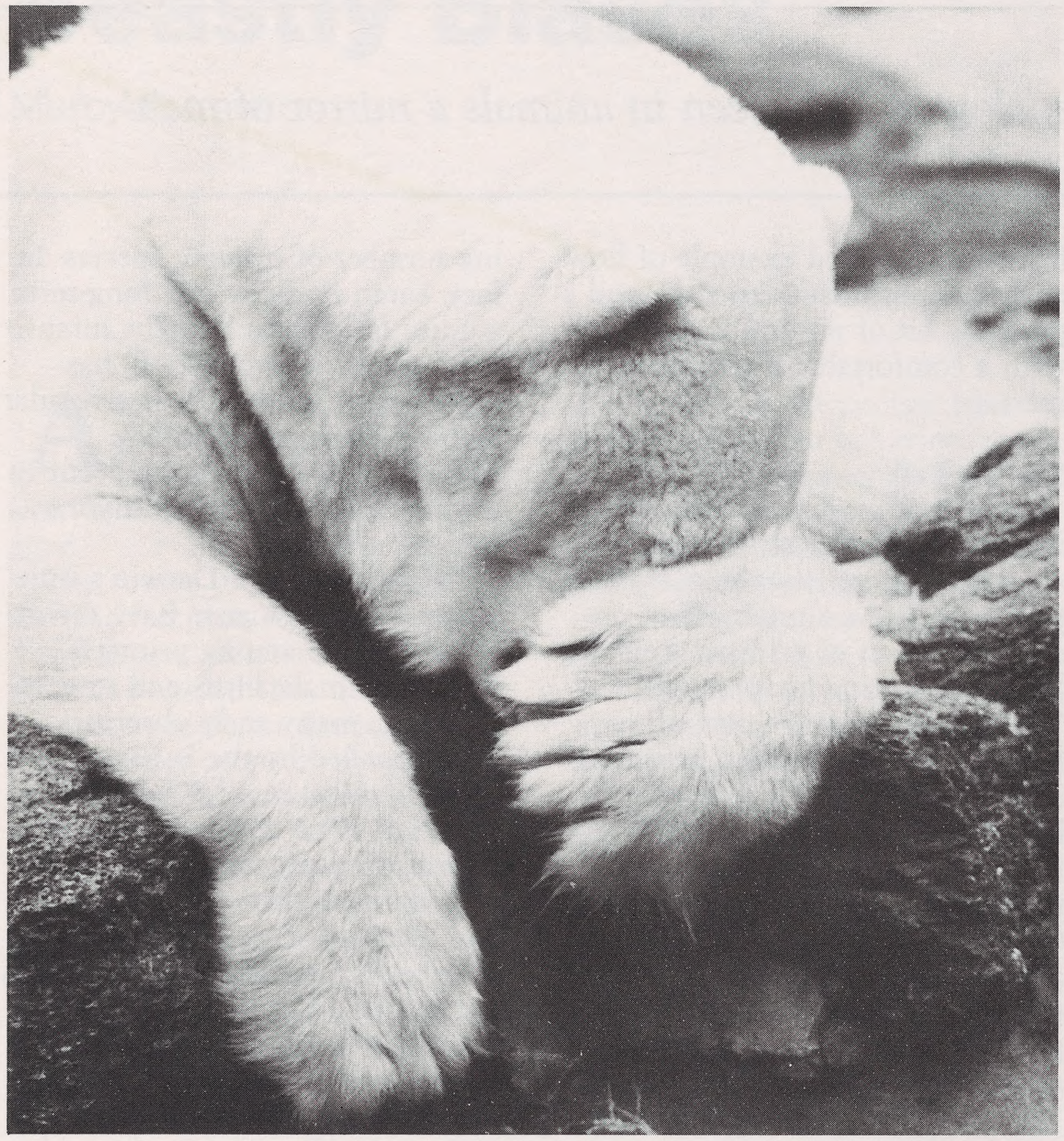
They have. From Darwin's time to our own, zoologists have reported infanticide among primates, other mammals, birds and insects. However, many early observers were appalled by the behavior and by its implications for human behavior. With the exception of Darwin himself, they wrote it off as a rare and unimportant aberration. Because it was every bit as unappealing as "infant rescue" was attractive, infanticide was not reexamined for a century.

The cases of infant rescue and infanticide are not unique. Our philosophical commitments and

Milton Tierney

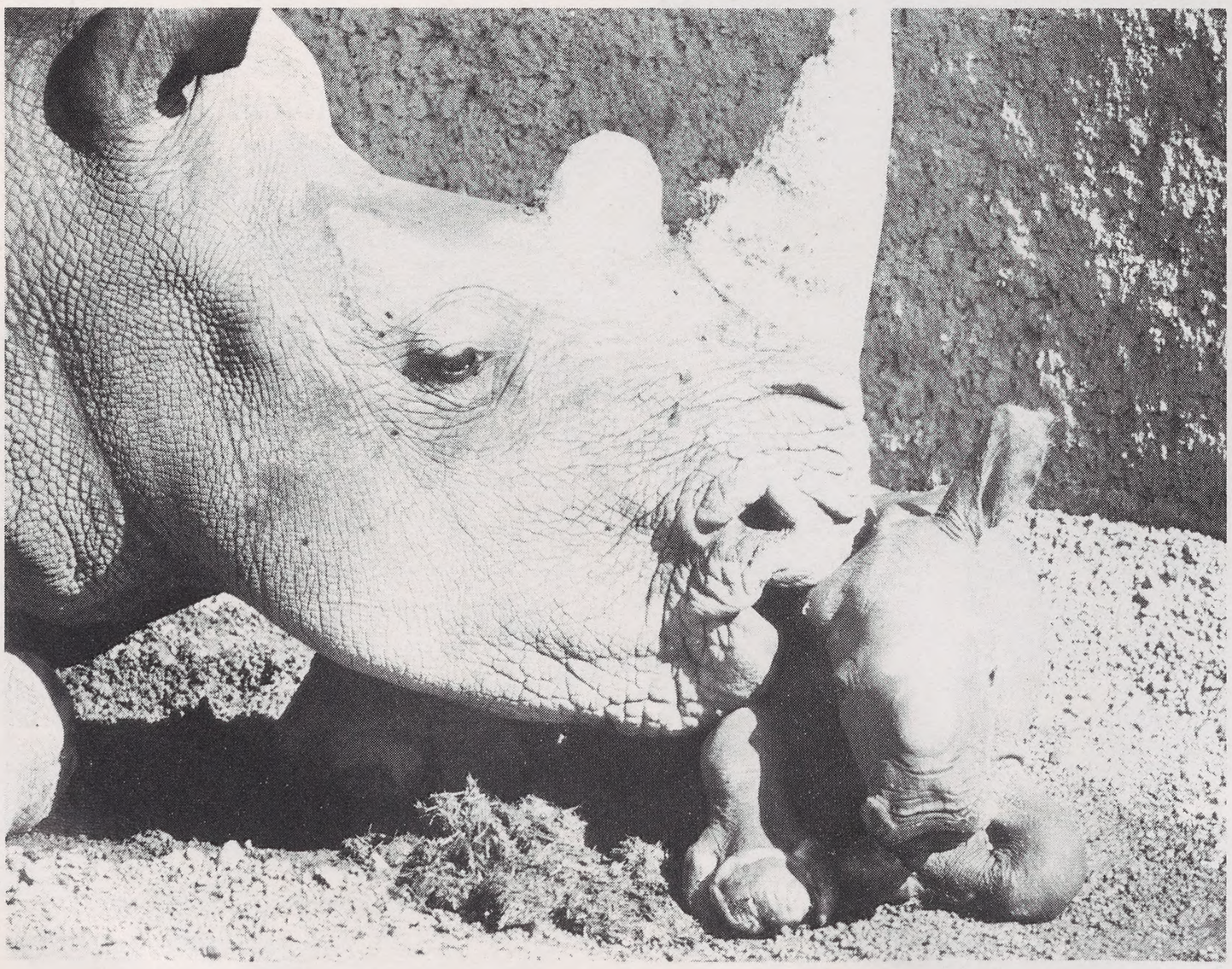
Grinning elephant and envious hippopotamus? Scenes like this tempt us to attribute human motives and abilities to animals.

Tom Sullivan



A shy polar bear? No, just a sleepy one.

Dick George, Phoenix Zoo



It may look like an affectionate kiss, but this white rhino at the Phoenix Zoo is simply cleaning her baby.

biases crop up throughout the history of behavioral biology. They are especially egregious—and ridiculous—in our explanations of animal sex. Whether we look back to the 18th century, when George Buffon described baboons as "insolently lascivious," or in the literature of modern sociobiology, where ducks are called "rapists," hummingbirds "prostitutes," and bluebirds "cuckolds," it is clear that enthusiasm for describing animal sexual behavior with prurient prose did not die with the birth of Darwinism.

It is, however, a costly enthusiasm. For, with the temptation to name animal behavior in human terms, comes the twin temptation to think we understand it. And perhaps we do. Sometimes we know exactly what an animal is doing because we have done the same thing ourselves. For instance, when accepting the Nobel prize, Dutch ethologist Niko Tinbergen stressed that our empathy with animals stems sometimes from the fact that we are also members of the animal kingdom.

Anthropomorphism and zoomorphism may then represent the genuine recognition of the kinship between man and beast. However, unless the apparent similarities are questioned and scientifically analyzed, we will never know just how far that kinship really goes. And unless we recognize the bias behind our perception of animal behavior, it will take us centuries even to ask the right questions. □

Suggested Readings

Bonner, J. T. 1980. Philosophy and less grand matters. Pp. 3-12 in *The Evolution Of Culture In Animals.* Princeton, NJ: Princeton University Press.

Caplan, A. L. 1978. *The Sociobiology Debate.* New York: Harper and Row.

Gould, S. J. 1981. *The Mismeasure Of Man.* New York: W. W. Norton.

Midgley, M. 1978. *Beast and Man: The Roots of Human Nature.* Ithaca: Cornell University Press.

Ruse, M. 1979. *Sociobiology: Sense or Nonsense?* Boston: D. Reidel Publishing Co.

Milton Tierney

High Ground

Jake Page

A young dama gazelle hides in tall grass.

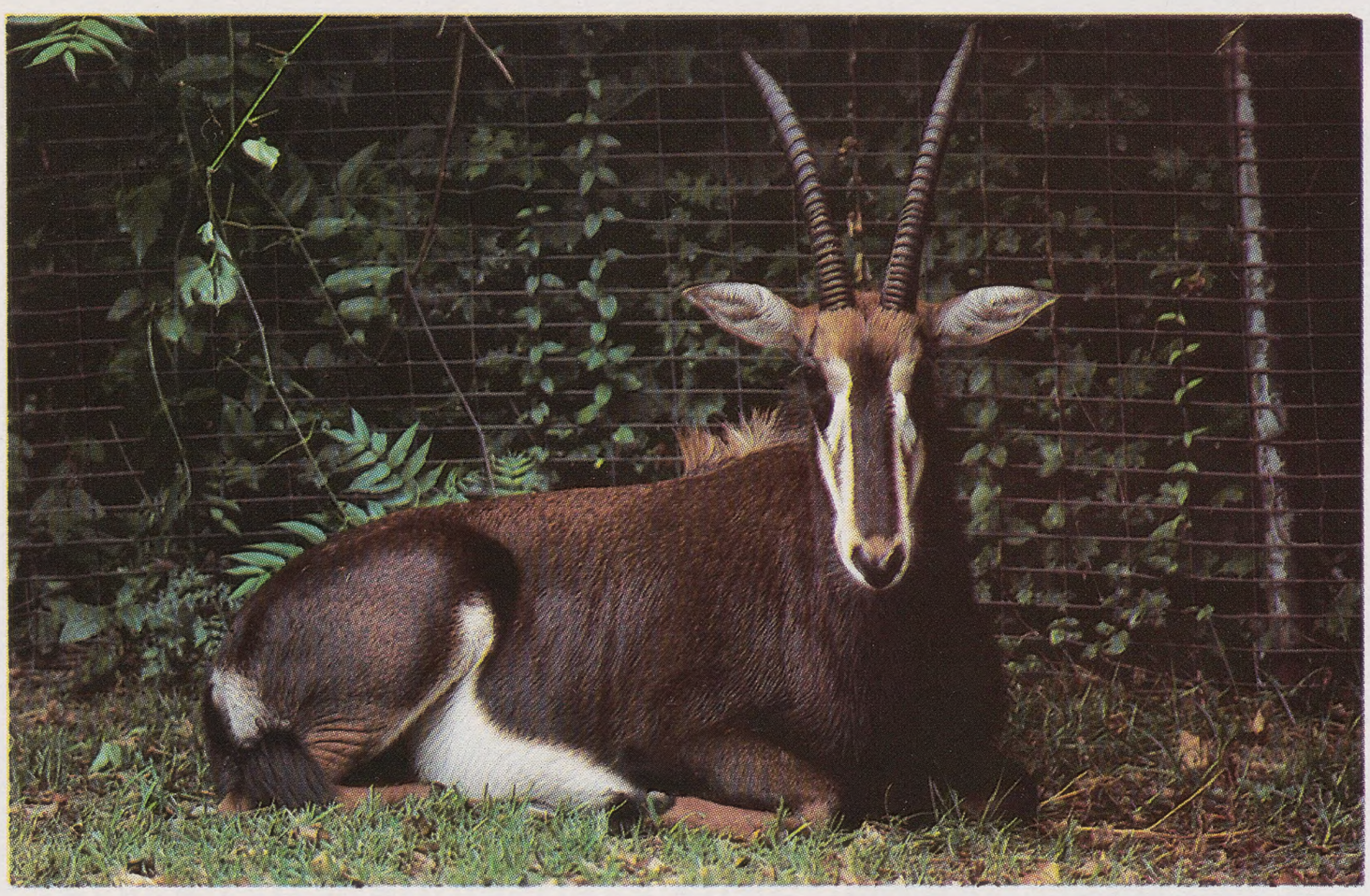
Eternal vigilance is the price of delicacy.

You can see this clearly of a crisp, cold morning at the western edge of the National Zoo where part of a grassy hill is given over to Dorcas gazelles. The rush hour traffic makes hardly a sound, there are no visitors in sight, yet the eight gazelles mill around on tiptoes, jumpy—a herd of 16 limpid eyes and countless nerve endings. There is a lot of ear-twitching and erratic trotting on stiff legs, a bit of shoving here and there. It is a far cry from panic, but you can sense that the gazelles know something is up.

"Something" has always been up for such creatures, ever since the Miocene epoch when grasses began to take over large plots of the planet and some insectivorous beasts were perhaps evolving the four-chambered stomach for such fodder. Along with the ungulate stomach came longer legs—a better design for those who need to be fleet over long stretches of relatively hard ground—and a constant state of nerves—the necessary *weltanschauung* of the tasty prey species.

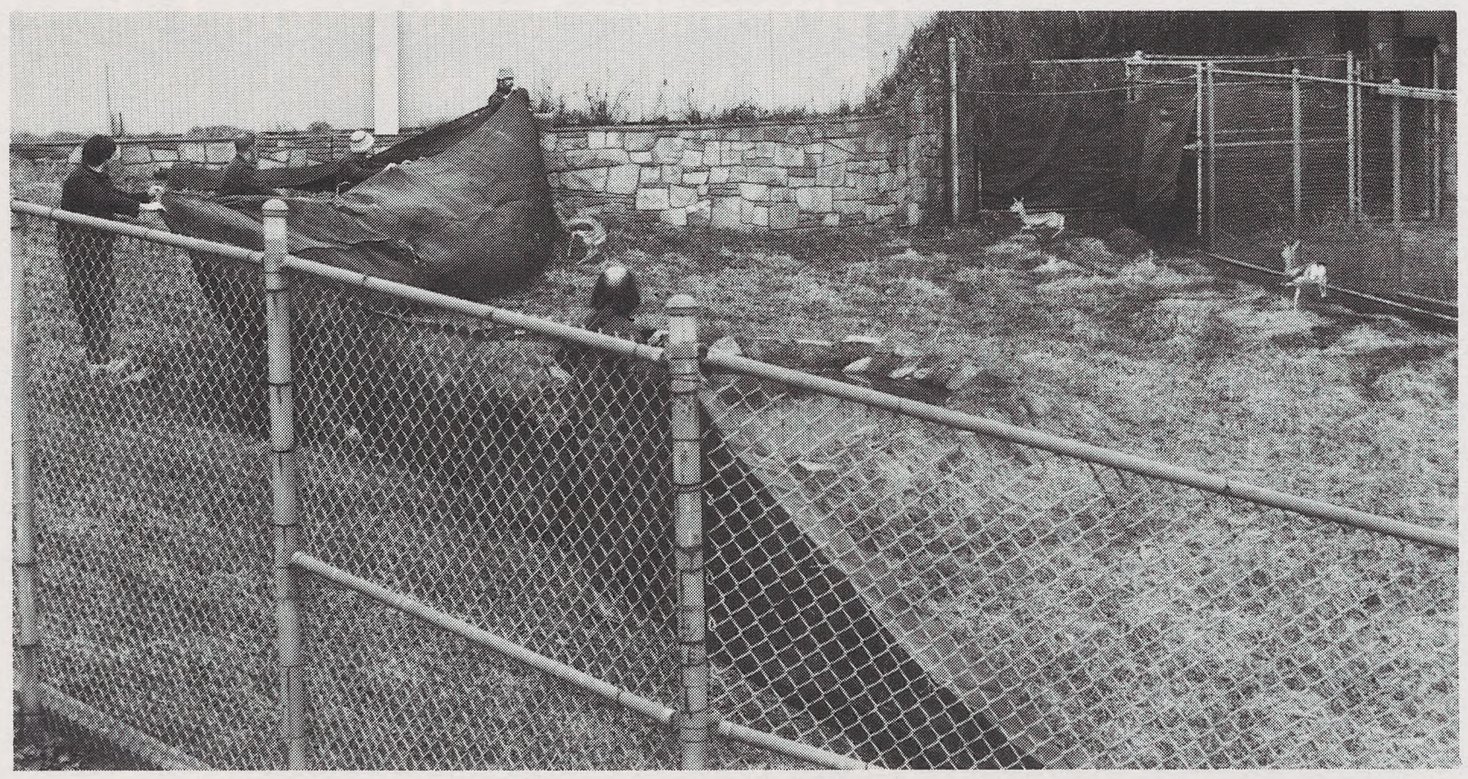
For millions of years, creatures like the Dorcas gazelles have spent their fragile lives alert, vigilant—spooked. And this morning, at the

Milton Tierney



Weighing as much as 650 pounds, the magnificent sable antelope is one of the largest ungulates at the Zoo.

Jessie Cohen, NZP Graphics



Keepers march down the hill holding a long swath of tennis netting to herd the Dorcas gazelles inside.

Jessie Cohen, NZP Graphics

The Hoofed Stock Building bustles with activity as eight gazelles are quickly weighed, innoculated and released. Left to right: NZP veterinarian Lindsay Phillips, keepers Al Perry and Jake Jacobs, Collection Manager Elizabeth Frank, keeper Milton Tierney, veterinary intern Tom Alvarado and technician Belinda Burwell.

National Zoo, something *is* up, though it is hard to see how the gazelles could know that. Later they are to be rounded up, weighed and given shots. No one is about but a lone keeper as the gazelles carry on their eons-old dance.

"They must have heard me banging around in here," said Mike Connery from his vantage point inside the Delicate Hoofed Stock House.

Eternal vigilance? Eternal paranoia is more like it.

Other keepers arrive, along with members of the veterinarian staff. They wear parkas and talk in a kind of oral shorthand: tactics for the task at hand. They stand outside the gazelles' fence on a hill. The gazelles close ranks, jostling, bolting a few feet, then returning to the herd. They move as far as possible from the people on the hill.

It is a necessary trauma, to be experienced three times a year. The gazelles are subject to a variety of parasitical diseases and the innoculations are a required intrusion. "It is particularly hard to tell when these animals are sick," said Bess Frank, the energetic and quiet-spoken collection manager of the Zoo's hoofed stock. "They mask their ailments. They can look fine to the keeper's eye in the morning and be gone by night." Mutual vigilance.

Up on the hill, the keepers unfold some ten yards of green plastic tennis netting and enter the enclosure. This mobile Maginot Line, held by five keepers, advances downhill. The gazelles bolt off erratically, bolt back, and within minutes find themselves herded inside the Delicate Hoofed Stock Building.

A bit of panic there, you think, but no one gets hurt: It is a low-risk panic, nothing like the approach of a hungry predator, though the gazelles may not make such distinctions when the chips are down.

Then, submissive but for an occasional thrashing of the hind

"You form a bond with these animals. Some of the males, you can't go near 'em, especially when they're in rut. But they know you."

legs, each animal is brought into a back room to be weighed and innoculated, clutched firmly in the arms of a keeper.

"A bond with these animals"

Mike Connery has been a keeper at the Zoo for over 20 years, most of them spent with the hoofed stock and the pandas. He is a raw-boned man of definite opinions and a fierce loyalty to the animals in his care.

"There's nothing undignified," he says with a trace of defiance, "about shoveling out these buildings and taking care of these animals." Mike grew up on a farm in Maryland and gravitated naturally to the care of these more exotic creatures.

He has hand-reared more than a dozen Dorcas gazelles, occasionally even bringing the infants home with him at night. At his apartment, he says, he has at one time or another also kept 20 snakes.

"I really love snakes," he says and quickly returns to the subject of hoofed stock, as if his comment about reptiles was ever so slightly disloyal. "You form a bond with these animals. Some of the males, you can't go near 'em, especially when they're in rut. But they know you. When we lose one I just go off in a corner and cry."

All in all, there are some 18 species of hoofed stock under the care of Bess Frank and her 14 keepers: the delicate hoofed stock, like the Dorcas gazelles and the diminutive dik-dik; the hardy hoofed stock, like the wildebeests, zebras and sable antelopes; and the deer—such as Eld's and Pere David. Also in Frank's care are the pandas, the elephants and those miraculous giraffes that sway like the trees that they, over time, became adapted to feeding on, just as some dinosaurs had grown to feed on the tops of primitive Jurassic conifers many millions of years before.

Headquartered in an office below the Elephant House, Frank is more often than not to be found patrolling her quadrant of the Zoo, conferring with keepers about the bamboo supply, the details of a gate under construction, the scheduling of keepers. She is altogether unimpressed with the fact that *Washingtonian* magazine found her to be among the national capital's up-and-coming professionals.

She checks on Johnnie, a male bongo who recently twisted his leg; the vets had taped up his swollen knee. There is a note on the door from veterinarian Mitchell Bush that says to provide Johnnie with more hay. Not to eat—the hoofed stock dines on feed pellets, fruit and vegetables—but for comfort. Johnnie stands sideways, large, sleek and a wondrous umber color with delicate white lines running vertically down his sides, disruptive coloration for life in the dappled light of the African forest. He is in the conformation stance of an American Kennel Club prize winner, front feet together, hind legs stretched slightly back, the elegant athlete complete with a nagging knee problem. He stares at the visitor peering through his window, vigilance that is apparently tinged by none of the nerves of the gazelle. You sense your overall irrelevance to this athlete.

Up the hill from the bongos is one of the highest geographical points in this city of hills. Along the way a sable antelope watches quietly. There used to be more animals among the hoofed stock. Some of them have moved to the Zoo's breeding farm in Front Royal, Va., though considerable breeding goes on at the Zoo as well. There are plans to relandscape much of the hoofed stock area but these await appropriations of funds, hard to come by nowadays. Meanwhile, the antelope and deer, the gazelles and the others wait in the quiet manner of their kind and the keepers make their daily rounds, as regular as the tolling of the carillon that rises elegantly in their midst.

Two llama-like animals munch contentedly in an enclosure near

Milton Tierney

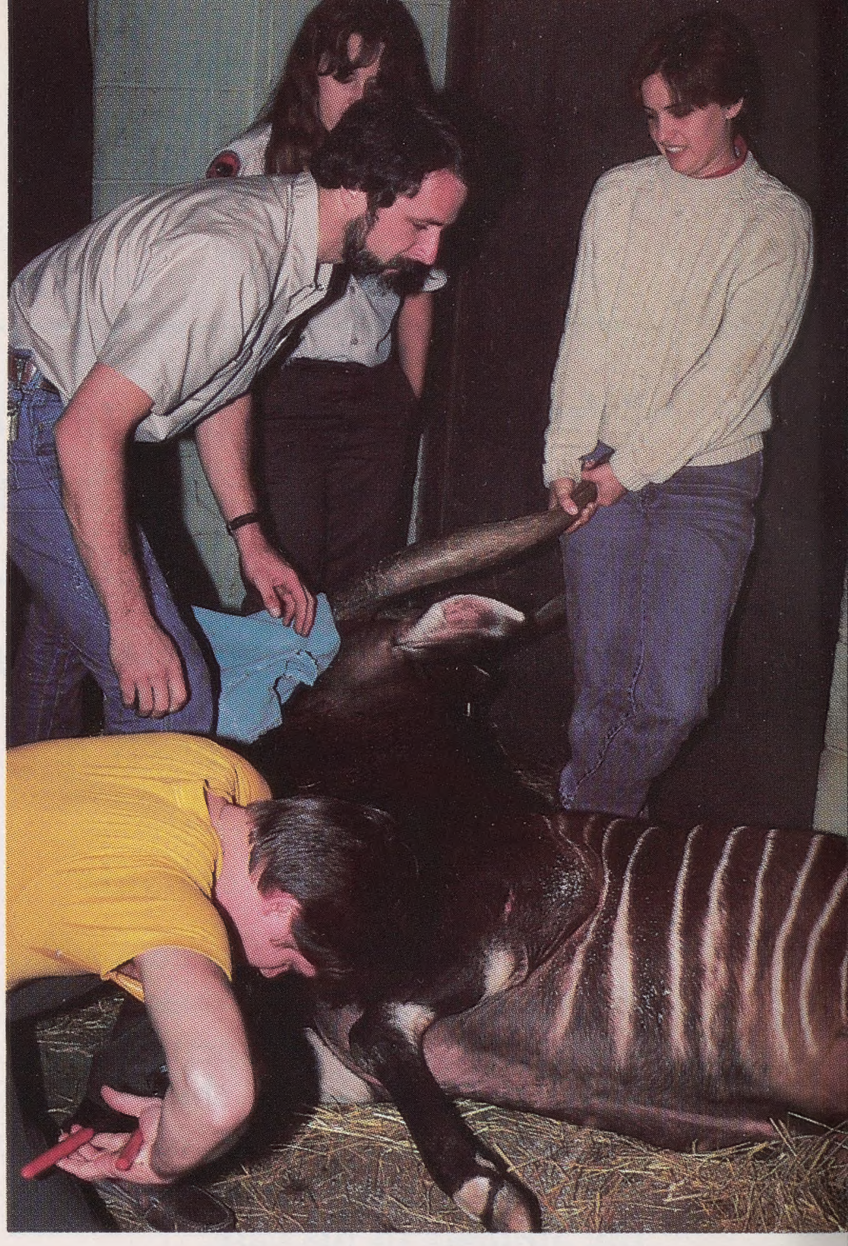
In the wild, the wildebeest is particularly vulnerable to predators at the moment of birth. Retaining their wild instincts at the Zoo, these animals keep a wary vigilance while giving birth.

the top of the hill. Guanacos, says the sign. Asked the difference between guanacos and llamas, keeper Jake Jacobson cheerfully replies: "Not much."

In a building high on the hill—it has no particular name, just "the hill"—there are three bongos. Jake opens the gate to a stall and greets an old male. He is lying on a thick blanket of hay, his forelegs drawn up under him. He looks at his visitors without much interest. Far away we can see the bright-domed Shrine at Catholic University, another part of the city's high ground. This bongo, Jake says, is "kind of in retirement up here. He doesn't have to breed anymore."

Relatively few visitors to the Zoo make their way up to the top of the hill. It's a peaceful place, little disturbed by the distant swish of traffic on Connecticut Avenue. Not a bad place at all for an old bongo bull to dream away his remaining days, up here on the high ground. □

Right: Frank steadies a bongo while former veterinary intern Scott Citino trims its hoofs. NZP veterinarian Lindsay Phillips and keeper Kim Pojeta stand by ready to help. Below: The reward of the hoofed stock staff's hard work is a healthy animal, like this sleek, bright-eyed bongo. This species has suffered severe losses recently as a result of famine in Chad, one of its countries of origin.



Picture Hunters

When the era of the big game hunter ended, a new type of animal stalker began to appear in forest and jungle, on safaris and in zoos: the camera buff.

In pursuit of the perfect picture, these modern hunters encounter far more rigors and hazards than their big-game predecessors: Not only must they find their quarry, they also must convince it to "pose"—all the while remembering technical maneuvers with high-tech zooms, special filters, f-stops, apertures, light meters, and much more.

Another problem for picture hunters is how to avoid offending their animal subjects—for, unlike the game hunter's prey, the quarry of the photographer remains as

Judith Bienvenu of Washington, D.C., won honorable mention in FONZ's 1985 photo contest with this portrait of a puma at the National Zoo. Overleaf: The magnificent photographs in Safari, *like this shot of pelicans in Kenya, were taken by Gunter Ziesler, who learned his art photographing animals in zoos.*

Milton Tierney

Gunter Ziesler, *Safari*

Invasion of the Camera Clickers

During a FONZ safari to Kenya, TV newsman John Goldsmith filmed and narrated an award-winning documentary for Metromedia TV about his experiences. The following is excerpted from Goldsmith's script:

A safari isn't complete—most of them don't even begin—without a trip to the local "watering hole"—ideally, one for man, another for beast. Ours is a place called The Ark, where we latter-day hunters limber up our trigger fingers and spend a lot of time whispering to each other.

This is kind of a zoo in reverse. The animals roam free and the people are in a cage. It's a little difficult to tell who enjoys whom the most.

They tell us the real fun begins after dark. They didn't tell us that even the fastest film would be hard pressed to capture more than a blur in the semi-blackness. It's well worth the price of admission though, just to imagine what's out there and to hear the sensational sounds that fill an African night.

During the daytime game drives, there's no trouble seeing; the problem is *believing!* Being so close to wild animals, with no bars in between, and having them act as if you're not there at all—it's a little tough to accept as real. Perhaps that's because, in the States, the technical wizards of Hollywood and the amusement parks routinely make fantasy appear like reality. Here, when confronted with honest-to-God reality, we have to keep telling ourselves, "This is *not* Disney World."

With the exception of criminal poaching or a native farmer getting even for a killed cow, there is no hunting in Kenya. It hasn't been legal for years. Everything on four legs seems to know that. So a pair of lions go through their mating ritual—a week-long honeymoon with hundreds of brief encounters—without so much as a sideways glance at a platoon of safari vehicles and their gawking, sometimes embarrassed occupants.

Any given week there may be 2,000 of these tourists beating around the bush in Kenya alone, blasting away with 35mm Cannons at anything that moves—and a lot of things that don't.

This invasion of the camera clickers seems a little rough on the flora and fauna: What's a mother lion to do when she can't take the children for an afternoon stroll without running into another darned minibus? How's a hyena to enjoy a quiet mud bath with all this traffic?

But—to use an appropriate cliche—look at the other side of the coin: Kenya's major cash crops are coffee, tea and tourists. So long as the animals are worth more alive than dead, you can bet your last Kenya shilling—they'll be protected!

—*John Goldsmith*

alive *after* being "shot" as it was before—its teeth, talons, tusks or hooves as dangerous as ever.

Even at the Zoo, where claws and fangs are not a hazard to photographers, animals can still retaliate against a camera buff by utter refusal to cooperate: The animal will retreat to its den, crouch behind a rock, sit in a dark corner or turn its least photogenic end toward the camera.

Gunter Ziesler, ***Safari***

Professional animal photographers have learned ways to avoid certain problems, and NZP staff photographer Jessie Cohen has passed some of these tips along to zoogoers in FONZ photography lectures. Her tips have produced many award-winning photos in FONZ's annual photo contest.

But even the most knowledgeable photographer can fail without a bit of luck and a lot of

These lions and yellow-bill storks were photographed in Kenya by Gunter Ziesler, who says in Safari *that he decided to turn pro only after many years as a photo hobbyist.*

Gunter Ziesler, *Safari*

patience. "A great wildlife photographer," says former *Wildlife* editor Nigel Sitwell in his introduction to *Safari: The East African Diaries of a Wildlife Photographer,* has "a passionate interest in animals" and "unlimited patience."

These requisites hold true for photographers of animals in the wild and at the Zoo. Gunter Ziesler, who took the spectacular photos in *Safari,* learned his skill as an amateur snapping animals in zoos—and later on vacations to wildlife sanctuaries. Not until he had worked in an office for almost 20 years did Ziesler turn his hobby into a full-time profession.

Patience and a love of animals, Ziesler agrees, are important ingredients of his success. But his ultimate practical advice to zoo and safari goers is: "Have your camera handy and loaded with film at all times."

Of course, few amateur camera buffs become professional wildlife photographers, as Ziesler did. But every now and then, as evidenced by the contest-winning photos on these pages, some amateurs are lucky enough to find the perfect scene, savvy enough to recognize it, patient enough to wait for just the right moment—and smart enough to have a loaded camera ready to turn a piece of blank film into a work of art! □

When David Stephenson of Chapel Hill, N.C., visited the National Zoo, his camera caught two tigers at a memorable moment.

A Square Meal at the Zoo

Sally Tongren

How much protein is in bat's milk? What is the nutritional value of a cricket? What do you feed a newborn bandicoot or baby giant panda? Which kind of fish do sea lions prefer?

At the National Zoo's Nutrition Laboratory, Dr. Olav Oftedal and his staff seek the answers to such exotic but very practical questions of animal nutrition.

When Oftedal joined the Zoo staff in 1978, he became the first full time nutritionist to work in any zoo in the United States. His basic responsibility is to monitor, evaluate and recommend the diets of the Zoo's 500 or so species of birds, mammals, amphibians and reptiles. That means he must keep track of a wide variety of dietary needs and food ingredients, respond to special eating problems as they occur, oversee the Zoo's Handrearing Facility and conduct basic research into the complexities of animal nutrition, a field that still holds many unanswered questions.

In an old stone building near Rock Creek, Oftedal has created a crisply modern laboratory that gleams with tiled floors and shining glassware. Here, he and his staff study the nutrient levels of some of the odd items in animal diets, the abilities of animals to use these nutrients, the relation of these abilities to evolutionary adaptations in the wild and ways to improve nutrition for zoo animals.

Many of the Zoo's animals are fed manufactured or "store-bought" food such as dry mink food, rabbit feed, pellets for grass-eating antelopes and zebras, frozen meat for lions, even dry dog and cat foods. Other zoo diets have been modified from domestic animal feeds. Manufactured food is analyzed from time to time, sometimes as a spot check of its composition, but more often as part of the Lab's research into a specific animal's food consumption and digestion.

Domestic Models

While domestic animals can sometimes serve as nutritional models for their exotic relatives, dietary adaptations are usually necessary to suit the special needs of each species. For example, the tiny dik-dik, one of the smallest antelope species, belongs to the same family (*Bovidae*) as domestic cattle, but is quite different in size and metabolism. Dik-diks have nutritional problems during the Washington winter, probably due to difficulty in extracting enough energy from their food to keep warm. To find out the best diet for dik-diks, the Nutrition Lab must measure exactly what goes into the dik-dik—and what comes out.

Several groups of animals have no good domestic models, making them especially difficult to keep in captivity. Among these are leaf-eaters like the colobus monkey, sloth and giraffe. Most leaf eaters supplement their natural leaf diet with other foods, so the Zoo must prepare a special mix for each species. But first, researchers must study how each leaf-eating species deals with the tannins, resins and other poisonous or distasteful ingredients of some leaves.

Another bane of zoo feeding is fish for seals and sea lions. It must be analyzed regularly because it can vary tremendously in nutritional value according to its species, freshness, season of catch and handling. Some kinds of frozen fish may be deficient in vitamin E or thiamine, with potentially serious effects on an animal's health. In addition, seals and sea lions have distinct preferences in fish and will eat less if they are fed certain varieties.

Then there are carnivores who have adapted to eating fruits and vegetables. The black, shaggy binturong in the Small Mammal House is a carnivore that eats a great deal of fruit; pandas, classified as carnivores, rely heavily on bamboo; even bears may eat more vegetable foods or insects than red meat.

A great many animals such as tamarins, marmosets and mice eat insects as at least part of their diets. True insectivores—shrews, tenrecs, solenodons—eat little or nothing else. Most bats are insectivorous, as are many lizards, frogs, snakes and birds—at least at some stage in their lives. Some birds, no matter what their usual adult diet, feed their young on insects.

It has been hard to supply insects for these animals or to find a good substitute. As a result, many of them are difficult to keep in captivity. Nutrition Lab researcher Mary Allen is studying this problem, partly supported by a FONZ grant.

An insect is a compact food

Sally Tongren is a FONZ volunteer and author of What's For Lunch?

package, but much of its bulk is its "packaging." The question is whether all that chitinous material in a beetle shell or grasshopper leg offers any sort of food value to the insect-eater. Could insects be ground up in a feed for some hard-to-maintain species? Or, because many reptiles and insectivorous birds respond best—or only—to live food, could an insect be fed on a high vitamin and mineral diet so that a bird or lizard who ate it would receive the benefit? Allen is looking for answers to questions like these.

Animal Infants

One of Oftedal's greatest interests is mammalian milk. His interest is far from academic, for, at the National Zoo's Handrearing Facility, milk is of primary importance.

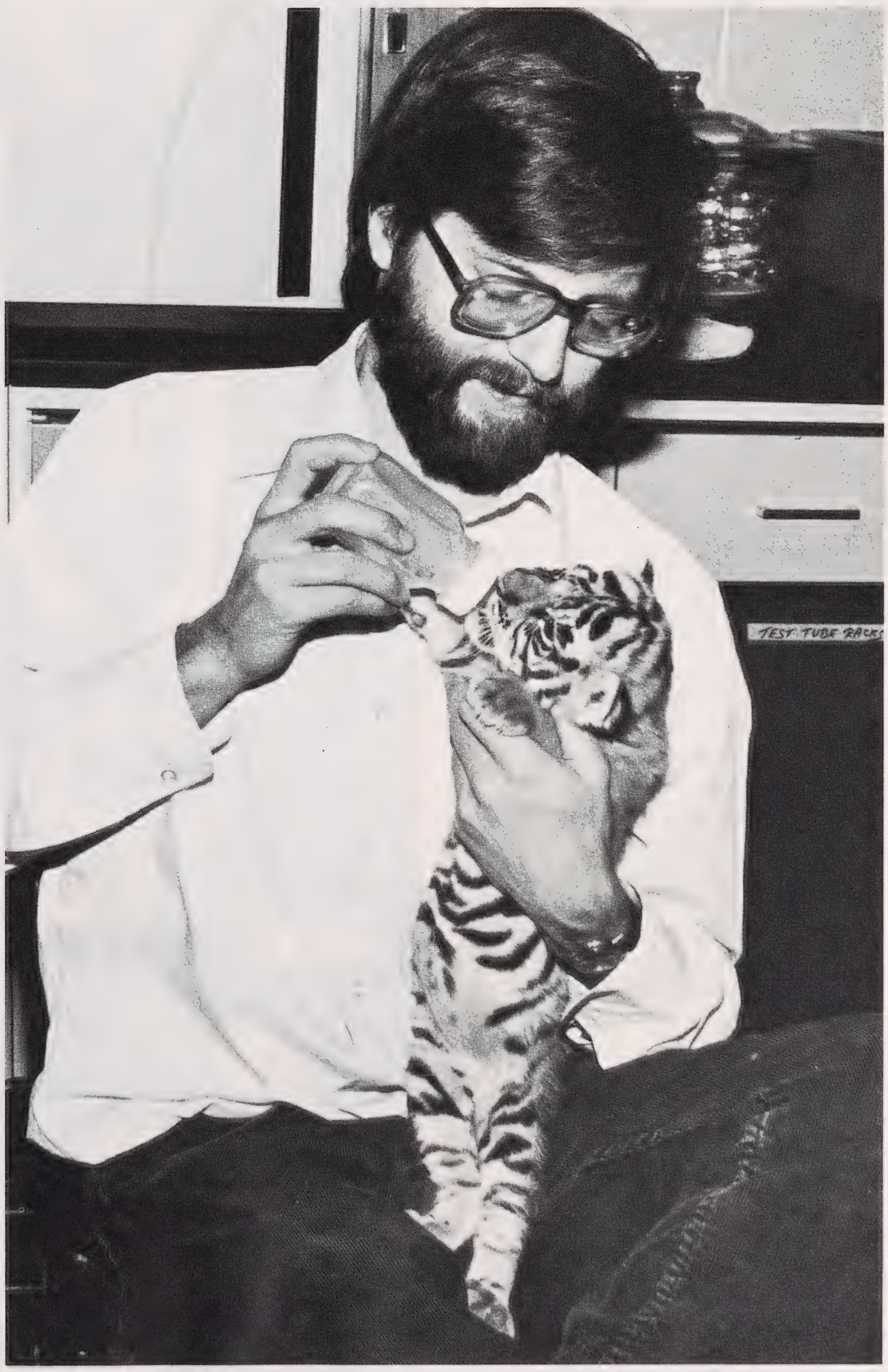
When the Zoo decided in 1981 to open a central handrearing operation, the first babies stayed in the Nutrition Lab. This worked fairly well when their numbers were small, although they were something of a distraction. It is difficult to concentrate on research computations when a baby tiger is chewing on your shoe.

As the project grew, the babies were moved to the lower part of the building, but the composition of their formulas continues to be worked out in the Lab.

The percentages of fat, protein, and other milk components vary widely among different species. Several Nutrition Lab research projects look at how these differences relate to sibling behavior, growth rates, environment and other factors that affect the nutrient needs of the young. Researchers are also studying milk components that may aid digestion or give resistance to disease in suckling animals.

Milk samples for analysis come from NZP animals, other zoos and animals in the wild. Nutrition Lab researcher Sara Iverson studies lactation among California sea lions on a remote Pacific island. In another study, Oftedal has collected 60 samples of bat milk, looking for changes in milk composition as the babies develop.

How does he milk a bat? While one researcher holds the bat, another injects oxytocin, a hor-



Jessie Cohen, NZP Graphics

Left: The giant panda's huge daily ration includes 30 pounds of bamboo, 10 pounds of rice, 4 pounds of apples, a pound of carrots, a cup of cottage cheese and several vitamin and mineral supplements. Above left: Crickets are a mainstay of the Carolina anolis' diet. Right: Oftedal feeds a milk formula he developed to a tiger cub.

mone that induces milk flow. The bat is then carefully milked into a pipette.

The Lab has even developed a milk formula for a baby panda. Ling-Ling seems to be a capable mother, so the Zoo will probably not have to handrear a baby panda, but Oftedal is ready just in case. He has some 40 samples of bear's milk, representing different stages of lactation, to form a model for a panda. The panda cub is born at about the same stage of development as a bear cub and grows at much the same rate, making bear milk a good model for a panda formula.

Real Challenges

Many formulas are fairly simple and can follow domestic models or the considerable experience of zoos in raising the more common infants such as young antelopes or monkeys. But some real challenges do appear. Marsupials are particularly difficult to handrear because they are born at a very early stage of development. The National Zoo's Handrearing Facility has worked with several species of marsupials. Three bandicoots—long-nosed Australian insectivores that look a bit like rats—were reared and weaned; a baby tree kangaroo almost made it to weaning, the point when handrearing is considered a success.

Two of the bandicoots later succumbed to an infection and the tree kangaroo baby died of pneumonia, but these were the first attempts anyone has made to handrear these species. Oftedal feels the difficulty probably lies in the lack of immunological substances the mother bandicoot or kangaroo would furnish to her young. One of the Lab's many research projects is looking for a solution to this problem.

With several researchers and a flourishing research "menu," the National Zoo's Nutrition Lab offers a revealing glimpse of just how much effort goes into a square meal at the Zoo. □

Milton Tierney

A red kangaroo joey munches on kale, a vegetable popular with many Zoo species.

Master Builder

Elizabeth Brett

Last February, after nearly 11 years of successful leadership, Sabin Robbins resigned as Executive Director of Friends of the National Zoo.

Robbins came to FONZ in April 1974 from the National Trust for Historic Preservation, where his "Sabin-style media blitz put the group on the map," says reporter Rita Kempley. When Robbins joined FONZ, there were 2,000 members. By the end of 1984, concentrated direct-mail campaigns, radio and tv spots and personal solicitation had brought in over 25,000 memberships. FONZ was now also "on the map."

Along with the growth in membership came a ten-fold increase in FONZ's annual income from 1973-84. "Sabin steered the Friends through the difficult, formative years with skill and imagination," said FONZ President Roscoe Moore. "All the Friends of the National Zoo owe him lasting thanks."

Financial success for FONZ has meant increased funding for the National Zoo. That support has been of importance to both education and scientific research, said former NZP Director Theodore Reed. The intern and volunteer programs, Reed said, have been especially helpful. "Sabin built up the membership and involved the membership. I've always respected his ideas and judgment."

Those ideas include a wealth of popular member programs, from an expanded ZooNight to wildlife safaris. Under Robbins' leadership, FONZ classes grew from 20 a year to 60; visitor services expanded enormously and concessions were modernized; *ZooGoer* blossomed into the full-color magazine you hold; and volunteer programs grew from 310 volunteers working about 12,000 hours in 1973, to over 600 people contributing more than 50,000 hours last year.

"During the past decade, Sabin's vitality and imagination have helped FONZ grow to the forefront of zoo-support organizations," said former FONZ president Robert Nelson. "His vision helped spawn an institution that has captured the metropolitan area's interest in and support of our National Zoo."

Collective Genius

But Robbins modestly refuses credit for FONZ's tremendous growth. "None of the successes of the last decade would have been possible without the collective genius of a fabulously dedicated and inspired staff," he said.

One of Robbins' most popular innovations is the FONZ safari program—wildlife trips that range from a day at the Bronx Zoo to three weeks in such paradises as the Galapagos Islands, the Baja peninsula, India, Nepal, Australia, China, Tibet, Europe, Iceland, the Amazon and Africa. Robbins led his first FONZ safari in 1976; today over 300 wildlife enthusiasts travel each year on 20 FONZ-sponsored safaris.

Melva Petrone, a long-time FONZ member, still remembers the 1979 safari Robbins led to the Baja peninsula. She looked forward to seeing hundreds of California gray whales play, mate, give birth and nurse their young in the warm waters of the San Ignacio lagoon. Along with other safari-goers, she climbed into a rubber raft and—dauntless at age 70—slowly slipped out among the dancing fins and tails.

The bus-size mammals seemed so close that one could almost reach out and touch them. Mrs. Petrone extended her arm and, in a flash, a glistening head rose from the sea. She felt the rubbery, wet skin. "He was warm to the touch and I loved him. I love all whales now," she said. In that moment a photographer immortalized her on a nationally distributed poster.

She relives the experience often. She's unable to go on safaris now. Ill, she seldom even leaves her apartment. But every few months, Robbins visits her, bearing pizza and tales of the wild. They reminisce about their travels together to Baja and the Galapagos Islands, and look at slides from recent FONZ safaris. She listens raptly to his stories. "Everything Sabin does is wonderful!" she said.

That opinion is echoed among zoo personnel nationwide. An active member of the American Association of Zoological Parks and Aquariums (AAZPA) since 1979, Robbins compiled and edited *Zoo Idea Pack*, a bi-monthly newsletter filled with practical fundraising and crowd-pleasing ideas for zoos.

As chairman of AAZPA's public

relations committee, Robbins heightened the organization's national profile. "He has done more for AAZPA than all its committees combined had done before he joined," said AAZPA Executive Director Robert Wagner.

As an occasional instructor at AAZPA's management school, Robbins has shared his public relations and management skills with other leaders in the zoo world. "Sabin consistently gets high marks from students evaluating his performance," said Wagner. "He is one of the best instructors we've ever had."

Contagious Enthusiasm

Touted as a man with "the hyperbole of a veteran salon regular," by *Washington Post* reporter Ken Ringle, Robbins is well known as a captivating ad lib speaker. His enthusiasm is invariably contagious and that has been a major key to his successes.

But it is because of those successes that Robbins is leaving FONZ. "What I enjoy most," he said, "is building a small organization from the ground up. I really miss the hands-on work. That's what gives me satisfaction. It's time for me to build again."

Everyone at FONZ and NZP is sorry to see him go and grateful for all he's done. "I will never cease to admire his constant enthusiasm and *joie de vivre*," said NZP Director Michael Robinson. "I will miss him badly, as a friend and colleague, and most of all as an inspired leader of the FONZ team of professionals."

Said Reed, "He came with his talents for building, creativity and growth. The Friends will miss him and the Zoo will miss him. He has left behind a good, strong, healthy organization." □

On FONZ's popular trip to the Galapagos Islands, intrepid safari-goers have an opportunity to "pet" a wild Galapagos tortoise. Robbins enjoyed the experience so much (above) that he made sure all FONZ members had a similar opportunity on ZooNight (left).

What's New at the Zoo?

Everyone is invited to the Zoo's Summerfest '85: A Tropical Forest Festival, June 15 and 16, celebrating the world's tropical forests and their animals, many of which are disappearing along with the forests.

The animals, culture and music of South America, Asia and Africa will be featured in performances by musicians, folksingers, dancers and mimes. Animal demonstrations, games, puppet shows, skits and films will entertain visitors while they learn about tropical forests and the creatures that inhabit them.

Arts and crafts at Summerfest '85 will include face painting, mask making and sculpting an elephant. You will even be able to listen to a storyteller while sitting inside a cage in the Elephant House. *That* should make Summerfest '85 a memorable trip to the Zoo!

Festival hours are 11 a.m. to 4 p.m. both days, rain or shine. Attendance is free.

Animal Update

• When two-year-old Griff, a Masai giraffe, arrived at the National Zoo early this year, "She skipped right into the Elephant House like she lived there," said keeper Morna Holden. Most of the estimated 25 Masai giraffes in North American zoos are descended from a small group of founders, so wild-born Griff should help to reduce inbreeding and increase the fitness of future generations of captive-born Masai giraffes.

• You can see whipscorpions, crayfish, marine invertebrates, flounder and a variety of other creatures in the lobby of the Zoo's Education Building. Part of this special display is a preview of the new invertebrate exhibit scheduled to open July 1986 in the Reptile House.

• The National Zoo's cusimanse pair—the first of their species to be exhibited in the U.S.—has produced two female offspring. Native to the forests of West Africa, the cusimanse is similar to the dwarf mongoose and meerkat. You can see one of the babies and both parents in the Small Mammal House.

• The Panda Yard furniture built last May by volunteers withstood an extra heavy workout this spring when Hsing-Hsing joined Ling-Ling most mornings to swing, climb and tumble. The giant pandas interacted more often and more amicably this spring, keepers report, than ever before.

—*David Vierling*

Jessie Cohen, NZP Graphics

Griff

Jessie Cohen, NZP Graphics

Panda encounters

Milton Tierney

Newborn cusimanses

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